Exhibit A – Scope of Work
OVERHEAD CATENARY LINE INSTALLATION PROJECT

TECHNICAL TASK LIST

Task #	CPR	Task Name
1.0		Administration
2.0	X	Installation of Overhead Catenary Line (OCL) System
3.0		Data Collection and Analysis

KEY NAME LIST

Task #	Key Personnel	Key Subcontractor(s)	Key Partner(s)
1.0	Joseph Impullitti-SCAQMD	Siemens	
2.0	Teal Shoop-Siemens	Siemens	
3.0	Teal Shoop-Siemens	Siemens	

GLOSSARY

Specific terms and acronyms used throughout this scope of work are defined as follows:

Term/ Acronym	Definition
ARFVTP	Alternative and Renewable Vehicle and Technology Program
CAM	Commission Agreement Manager
CARB	California Air Resource Board
CPR	Critical Project Review
Energy Commission	California Energy Commission
FTD	Fuels and Transportation Division
NESC	National Electrical Safety Code
OCL	Overhead Catenary Line
Contractor	South Coast Air Quality Management District
SCAQMD	South Coast Air Quality Management District
SCAG	Southern California Association of Governments
SJVAPCD	San Joaquin Valley Air Pollution Control District

BACKGROUND

Assembly Bill (AB) 118 (Nùñez, Chapter 750, Statutes of 2007), created the Alternative and Renewable Fuel and Vehicle Technology Program (ARFVTP). The statute authorizes the California Energy Commission (Energy Commission) to develop and

deploy alternative and renewable fuels and advanced transportation technologies to help attain the state's climate change policies. AB 8 (Perea, Chapter 401, Statutes of 2013) re-authorizes the ARFVTP through January 1, 2024, and specifies that the Energy Commission allocate up to $20 million per year (or up to 20 percent of each fiscal year's funds) in funding for hydrogen station development until at least 100 stations are operational. The Energy Commission has an annual program budget of approximately $100 million and provides financial support for projects that:

- Develop and improve alternative and renewable low-carbon fuels;
- Optimize alternative and renewable fuels for existing and developing engine technologies;
- Produce alternative and renewable low-carbon fuels in California;
- Decrease, on a full fuel cycle basis, the overall impact and carbon footprint of alternative and renewable fuels and increase sustainability;
- Expand fuel infrastructure, fueling stations, and equipment;
- Improve light-, medium-, and heavy-duty vehicle technologies;
- Retrofit medium- and heavy-duty on-road and non-road vehicle fleets;
- Expand infrastructure connected with existing fleets, public transit, and transportation corridors; and
- Establish workforce training programs, conduct public education and promotion, and create technology centers.

This project will provide the installation of an overhead catenary line system along a test track near I-710 for use by the electric trucks retrofitted under the Energy Commission's agreement 600-12-011.

Problem Statement:
Despite major advances in emissions performance, heavy duty diesel trucks operating in dense urban areas continue to face pressure to achieve lower emission operation. The South Coast Air Quality Management District (SCAQMD) has identified the development and deployment of zero emissions goods movement transportation systems as one of the agency's top priorities in order to attain federal air quality standards. Zero emission transportation and goods movement technologies are also being proposed in the Southern California Association of Government's (SCAG) 2012 Goods Movement Appendix to the Regional Transportation Plan as well as the joint California Air Resource Board (CARB), SCAQMD and San Joaquin Valley Air Pollution Control District (SJVAPCD) Vision for Clean Air: A Framework for Air Quality and Climate Planning. Zero emission truck lanes are also being considered for the I-710 freeway expansion, which is an approximately 20 mile north-south trade corridor.

Goals of the Agreement:
The goal of this Agreement is to promote the implementation of zero emission goods movement technologies, and the secondary goal is to demonstrate the most viable technology to be adopted for a future, regional zero-emissions corridor.

The Overhead Catenary Line (OCL) Project is designed to achieve a zero emissions goods movement transportation system by constructing approximately one (1) mile of

road infrastructure for supplying power via overhead catenary for one lane in each direction along Alameda Street in Carson, CA. The catenary system is expected to supply electric power for trucks retrofitted with pantograph systems funded under Energy Commission agreement 600-12-011.

Objectives of the Agreement:
The objectives of this agreement are to facilitate the eventual connection of the pantograph systems installed under Energy Commission agreement 600-12-011 to a catenary system on a test track and to facilitate the eventual demonstration of vehicles and pantograph systems in real world drayage operations on a catenary system.

FORMAT/REPORTING REQUIREMENTS

Deliverables/Reports
When creating reports, the Contractor shall use and follow, unless otherwise instructed in writing by the Commission Contract Manager (CAM), the latest version of the Consultant Reports Style Manual published on the Energy Commission's web site:

http://www.energy.ca.gov/contracts/consultant_reports/index.html

Each final deliverable shall be delivered as one original, reproducible, 8 ½" by 11", camera-ready master in black ink. Illustrations and graphs shall be sized to fit an 8 ½" by 11" page and readable if printed in black and white.

Electronic File Format
The Contractor shall deliver an electronic copy (CD ROM or memory stick or as otherwise specified by the CAM) of the full text in a compatible version of Microsoft Word (.doc).

The following describes the accepted formats of electronic data and documents provided to the Energy Commission as contract deliverables and establishes the computer platforms, operating systems and software versions that will be required to review and approve all software deliverables.

- Data sets shall be in Microsoft (MS) Access or MS Excel file format.
- PC-based text documents shall be in MS Word file format.
- Documents intended for public distribution shall be in PDF file format, with the native file format provided as well.
- Project management documents shall be in MS Project file format.

Software Application Development
If this scope of work includes any software application development, including but not limited to databases, websites, models, or modeling tools, contractor shall utilize the following standard Application Architecture components in compatible versions:

- Microsoft ASP.NET framework (version 3.5 and up) Recommend 4.0

- Microsoft Internet Information Services (IIS), (version 6 and up) Recommend 7.5
- Visual Studio.NET (version 2008 and up) Recommend 2010
- C# Programming Language with Presentation (UI), Business Object and Data Layers
- SQL (Structured Query Language)
- Microsoft SQL Server 2008, Stored Procedures Recommend 2008 R2
- Microsoft SQL Reporting Services Recommend 2008 R2
- XML (external interfaces)

Any exceptions to the Software Application Development requirements above must be approved in writing by the Energy Commission Information Technology Services Branch.

TASK 1 ADMINISTRATION

TASK 1- AGREEMENT MANAGEMENT

Task 1.1 Kick-off Meeting

The goal of this task is to establish the lines of communication and procedures for implementing this Agreement.

The Contractor shall:

- Attend a "kick-off" meeting with the CAM, the Contracts Officer, and a representative of the Accounting Office. The meeting will be held via Web-Ex or teleconference. The Contractor shall include their Project Manager, Contracts Administrator, Accounting Officer, and others designated by the CAM in this meeting. The administrative and technical aspects of this Agreement will be discussed at the meeting.

- If necessary, prepare an updated Schedule of Deliverables based on the decisions made in the kick-off meeting.

The CAM shall:
- Arrange the meeting including scheduling the date and time.
- Provide an agenda to all potential meeting participants prior to the kick-off meeting.

Deliverables:
- An Updated Schedule of Deliverables (if applicable)

Task 1.2 Critical Project Review (CPR) Meetings

CPRs provide the opportunity for frank discussions between the Energy Commission and the Contractor. The goal of this task is to determine if the project should continue to receive Energy Commission funding to complete this Agreement and to identify any needed modifications to the tasks, deliverables, schedule or budget.

The CAM may schedule CPR meetings as necessary, and meeting costs will be borne by the Contractor.

Meeting participants include the CAM and the Contractor and may include the Energy Commission Contracts Officer, the Fuels and Transportation Division (FTD) natural gas fuel lead, other Energy Commission staff and Management as well as other individuals selected by the CAM to provide support to the Energy Commission.

The CAM shall:
- Determine the location, date, and time of each CPR meeting with the Contractor. These meetings generally take place at the Energy Commission, but they may take place at another location.
- Send the Contractor the agenda and a list of expected participants in advance of each CPR. If applicable, the agenda shall include a discussion on both match funding and permits.
- Conduct and make a record of each CPR meeting. Prepare a schedule for providing the written determination described below.
- Determine whether to continue the project, and if continuing, whether or not modifications are needed to the tasks, schedule, deliverables, and/or budget for the remainder of the Agreement. Modifications to the Agreement may require a formal amendment (please see section 8 of the Terms and Conditions). If the CAM concludes that satisfactory progress is not being made, this conclusion will be referred to the Lead Commissioner for Transportation for his or her concurrence.
- Provide the Contractor with a written determination in accordance with the schedule. The written response may include a requirement for the Contractor to revise one or more deliverable(s) that were included in the CPR.

The Contractor shall:
- Prepare a CPR Report for each CPR that discusses the progress of the Agreement toward achieving its goals and objectives. This report shall

include recommendations and conclusions regarding continued work of the projects. This report shall be submitted along with any other deliverables identified in this scope of work. The Contractor shall submit these documents to the CAM and any other designated reviewers at least 15 working days in advance of each CPR meeting.

- Present the required information at each CPR meeting and participate in a discussion about the Agreement.

CAM Deliverables:

- Agenda and a list of expected participants
- Schedule for written determination
- Written determination

Contractor Deliverable:

- CPR Report(s)

Task 1.3 Invoices

The Contractor shall:

- Prepare invoices for all reimbursable expenses incurred performing work under this Agreement in compliance with the Exhibit B of the Terms and Conditions of the Agreement. Invoices shall be submitted with the same frequency as progress reports (task 1.4). Invoices must be submitted to the Energy Commission's Accounting Office.

Deliverables:

- Invoices

Task 1.4 Manage Subcontractors

The goal of this task is to ensure quality products, to enforce subcontractor Agreement provisions, and in the event of failure of the subcontractor to satisfactorily perform services, recommend solution to resolve the problem.

The Contractor shall:

- Manage and coordinate subcontractor activities. The Contractor is responsible for the quality of all subcontractor work and the Energy Commission will assign all work to the Contractor. If the Contractor decides to add new subcontractors, they shall 1) comply with the Terms and Conditions of the Agreement, and 2) notify the CAM who will follow the Energy Commission's process for adding or replacing subcontractors.

Task 1.5 Progress Reports

The goal of this task is to periodically verify that satisfactory and continued progress is made towards achieving the objectives of this Agreement.

The Contractor shall:

- Prepare progress reports which summarize all Agreement activities conducted by the Contractor for the reporting period, including an assessment of the ability to complete the Agreement within the current budget and any anticipated cost overruns. Each progress report is due within 15 calendar days after the end of the reporting period. The CAM will provide the format for the progress reports.

Deliverables:
- Monthly Progress Reports

Task 1.6 Final Report
The goal of this task is to prepare a comprehensive written Final Report that describes the original purpose, approach, results and conclusions of the work completed under this Agreement. The Final Report shall be prepared in language easily understood by the public or layperson with a limited technical background.

The Final Report must be completed before the termination date of the Agreement in accordance with the Schedule of Deliverables.

The Final Report shall be a public document. If the Contractor has obtained confidential status from the Energy Commission and will be preparing both a public and a confidential version of the Final Report, the Contractor shall perform the following subtasks for both the public and confidential versions of the Final Report.

Task 1.6.1 Final Report Outline

The Contractor shall:
- Prepare and submit a draft outline of the Final Report for review and approval. The CAM will provide written comments to the Contractor on the draft outline. The Contractor shall review the comments and discuss any issues with the recommended changes with the CAM.

- Prepare and submit the final outline of the Final Report, incorporating CAM comments.

Deliverables:
- Draft Outline of the Final Report
- Final Outline of the Final Report

Task 1.6.2 Final Report

The Contractor shall:
- Prepare the draft Final Report for this Agreement in accordance with the approved outline.

- Submit the draft Final Report for review and comment. The CAM will provide written comments to the Contractor. The Contractor shall review the comments and discuss any issues with the recommended changes with the CAM.

- Prepare and submit the Final Report, incorporating CAM comments.

Deliverables:
- Draft Final Report
- Final Report

Task 1.7 Final Meeting
The goal of this task is to discuss closeout of this Agreement and review the project.

The Contractor shall:
- Meet with Energy Commission staff prior to the term end date of this Agreement. The meeting will be held via Web-Ex or teleconference. This meeting will be attended by the Contractor, Project Manager, and the CAM. The CAM will determine any additional appropriate meeting participants. The administrative and technical aspects of Agreement closeout will be discussed at the meeting.

- Present findings, conclusions, and recommended next steps (if any) for the Agreement, based on the information included in the Final Report.

- Prepare a written document of meeting agreements and unresolved activities.

- Prepare a schedule for completing the closeout activities for this Agreement, based on determinations made within the meeting.

Deliverables:
- Written documentation of meeting agreements
- Schedule for completing closeout activities

Task 1.8 Identify and Obtain Required Permits
The goal of this task is to verify all permits required for work completed under this Agreement in advance of the date they are needed to keep the Agreement schedule on track.

Permit costs and the expenses associated with obtaining permits are not reimbursable under this Agreement. While the budget for this task will be zero dollars, the Contractor may show match funds for this task. Permits must be identified in writing and obtained before the Contractor can incur any costs related to the use of the permits for which the Contractor will request reimbursement.

The Contractor shall:

- Prepare a letter documenting the permits required to conduct this Agreement and submit it at least 2 working days prior to the kick-off meeting. Provide in the letter:
    - A list of the permits that identifies the:
        - Type of permit
        - Name, address and telephone number of the permitting jurisdictions or lead agencies
    - A schedule the Contractor will follow in applying for and obtaining these permits.

- Discuss the list of permits and the schedule for obtaining them at the kick-off meeting. The implications to the Agreement if the permits are not obtained in a timely fashion or are denied will also be discussed. If applicable, permits will be included as a line item in the progress reports.

- If during the course of the Agreement additional permits become necessary, then provide the appropriate information on each permit and an updated schedule to the CAM.

- As permits are obtained, send a copy of each approved permit to the CAM if requested.

- If during the course of the Agreement permits are not obtained on time or are denied, notify the CAM within 5 working days.

Deliverables:
- A letter documenting the permits and schedule
- Updated list of permits and schedule (as necessary)
- A copy of each approved permit (if requested)

TECHNICAL TASKS

TASK 2.0 INSTALLATION OF OVERHEAD CATENARY LINE (OCL) SYSTEM

The goal of this task is to install the OCL infrastructure consisting of approximately one mile of catenary system supplying power via overhead lines for one lane in each direction.

The Contractor shall:
- Develop and maintain a program schedule outlining timeframe and key steps for installing OCL infrastructure and submit to CAM.
- Execute works for the foundations and duct bank, shipment and installation for the OCL.
- Install OCL infrastructure

- OCL will be installed with two parallel catenary systems that are installed above each lane in both directions of the roadway.
- The height of the contact wires shall be designed to be in accordance with California General Order 95[*] for overhead lines and with National Electrical Safety Code (NESC) requirements where applicable.
- Accurate positioning of the overhead contact line along the roadway will be assured by mechanical tensioning devices.
- Diameter and depth of the foundations will be determined by detailed soil investigations and static calculations.

Deliverables:

- Program Schedule
- Engineering designs/reports/schematics outlining construction of OCL infrastructure (including designs of mechanical tensioning devices, support poles, foundation size etc.)
- Documentation showing compliance with California General Order 95 and NESC requirements where applicable
- Project site map showing layout of support poles, substation, and other OCL infrastructure

[CPR WILL OCCUR DURING THIS TASK. SEE TASK 1.2 FOR DETAILS]

Task 3.0 DATA COLLECTION AND ANALYSIS

The goal of this task is to collect operational data from the project, to analyze that data for economic and environmental impacts, and to include the data and analysis in the Final Report.

The Contractor shall:

- Execute data collection test plan developed by Siemens.
- Troubleshoot any issues identified.
- Collect a minimum 6 months of throughput, usage, and operations data from the project by demonstrating the operation of the OCL system with 3 to 4 trucks retrofitted with pantograph systems under Energy Commission contract 600-12-011. This data should include, but not be limited to:
  - Tests with different truck models including tests that shall require a combination of different trucks running simultaneously.
  - Demonstrate the catenary infrastructure system with vehicle manufacturers and their trucks in non-commercial operation simulating standard drayage cycles in port truck operation.
- Determine costs.
  - Catenary system construction costs/mile.
  - Operating costs.

[*] California Public Utilities Commission, Rules for Construction and Maintenance of Overhead and Underground Electric Supply and Communication Systems

    - Integration of pantograph per truck costs.
    - Electric fuel - kWh/mile costs.
- Specific jobs and economic development resulting from this project.
- Provide data on potential job creation, economic development, and increased state revenue as a result of expected future expansion.
- Provide data on greenhouse gas emission reductions resulting from this project.
- Reports shall also contain the following information on the infrastructure and trucks (a) operating hours, (b) miles traveled, (c) fuel consumption, (d) percentage availability, (e) mean time between failures and (f) maintenance hours.
- Compare any project performance and expectations provided in the proposal to Energy Commission with actual project performance and accomplishments.

Deliverables:

- Data collection information and analysis will be included in the Final Report